23-A simple twin occur in
a-hornblende b-plagioclase c-orthoclase
24-Polysynthetic or albite twins occur in
a-olivine b-plagioclase c-orthoclase
25-parting occur in
a-olivine b-plagioclase c-orthoclase
26-Biaxial minerals have
a-Two optic axis directions b-One optic axis direction
c-no optic axis direction
27-Uniaxial minerals have
a-Two optic axis directions b-One optic axis direction
c-no optic axis direction
28-Isotropic minerals have
a-Two optic axis directions b-One optic axis directions
c-no optic axis direction
29-The limit between the various orders of interference color is
a-red b-green c-blue
30-A simple twin occur in
a-hornblende b-plagioclase c-orthoclase

Short notes on (20 marks):
1-Interference figure of uniaxial and determine of sign (10 marks)
2-Extinction and type of extinction (10 marks)

	Assiut University- Faculty of Science **Frist Semester- Final Exam 2025-2026** **Geology Department**	**Level : (2)** **Date: 13/1/2026** **Time: 2 h**	
Course Title: Geographic Information System (GIS)			**Code: 210G**
Instructors: Dr. Hassan Abbas			
Important:	**No. of pages 1**	**No. Of questions 8**	**Total Mark: 50 degree**

I) Label the correct sentence with true (T) and the incorrect one with false (F): **(15 Marks)**

1. Topology helps identify spatial relationships between features.
2. Sliver polygons result from perfectly matched boundaries.
3. Lines in vector data models represent one-dimensional features.
4. Time is an unimportant component of geographic information.
5. GIS treats the Earth as a three-dimensional sphere rather than a cube.
6. Dynamic maps allow user interaction such as zooming and layer control.
7. Large-scale maps show less detail but cover larger areas.
8. Direction in GIS always requires a reference point.
9. All maps are considered scaleless when viewed digitally.
10. GIS can be used to model "what-if" scenarios for planning purposes.

II) Write on GIS components. **(7 Marks)**

III) Explain buffering and describe different types of buffer operations. **(6 Marks)**

IV) Compare between reference maps and thematic maps. **(5 Marks)**

V) Discuss the advantages and disadvantages of raster data models. **(5 Marks)**

VI) Describe the major applications of GIS in government & environmental sciences. **(5 Marks)**

VII) Explain how GIS differs from a traditional database management system (DBMS). **(4 Marks)**

VIII) Describe how GPS technology determines location on the Earth's surface. **(3 Marks)**

Best Wishes.... ***Dr. Hassan Abbas***

cV

Assiut University-Faculty of Sciences First Semester-Final Exam.2025-2026 Geology Department Course title: Crystallography and Mineralogy		Program: Special Chemistry Level: two Date:11-1-2026 Time: Two hours CODE: 231G

Part I. Crystallography

Answer <u>FIVE ONLY</u> of the following:

1. Choose the correct answer from A,B,C,D of the following:
   a) In hexagonal crystal system, miller indices are represented by a set integer numbers of :(A) 3 - (B) 4 - (C) 5 - (D) 6
   b) Ditetragonal bipyramid is a crystal form that consists of crystal faces number (A) 32 - (B) 16 - (C) 24 - (D) 12
   c) A group of faces on a crystal related to the same symmetry function is named: (A) crystal form - (B) crystal faces - (C). crystal edge - (D) crystal symmetry
   d) The number of faces of the holloform in isometric system is (A) 24 - (B) 12 - (C) 48 - (D) 16
   e) Miller indices symbols of prism is represented by the following symbol (A) (hk0) - (B) (h0l) - (C) (0kl) - (D) (0k0)
2. Explain How that $\bar{6} \equiv 3/m$? (5pts)
3. On the basic circles, plots the sterographic projection of symmetry functions 6/mmm (hexagonal system) and 2/m (monoclinic system). (5pts)
4. Write the number of faces and miller indices symbol of the following forms (ditetragonal bipyramid – trisoctahedron – ditetragonal prism – orthorhombic bipramid) (5pts)
5. Explain why fifth axes symmetry is not found in the crystals? (5pts)

Part 2. Mineralogy

Answer <u>FIVE ONLY</u> of the following

1. Choose the correct answer from a,b,c,d of the following: (5pts)
   a) Which of the following minerals are built from the independent silicate structure?

LOOK BACK

(A) Garnet (B) Pyroxene (C) Amphibole (D) Biotite

b) A mineral is named and classified mainly by what criteria?

(A) its major cations - (B) its crystal class - (C) its major anionic component - (D) its space group symmetry

c) How many silicon ions are involved in the formation of the silicon-oxygen tetrahedron? A) Two - (B) Three - (C) One - (D) Four

d) Which mineral is aluminosilicates of the following:
A) Orthopyroxene - (B) kyanite - (C) olivine - (D) quartz

e) Which ion of the following is NOT present in the chemical formula of pyroxenes?
(A) Fe^{2+} - (B) Ca^{2+} - (C) $(OH)^-$ - (D) Mg^{2+}

2. If Na substitutes for Ca in plagioclase, what other substitution must occur? And why? (5pts)
3. In the discontinuous mineral series of Bowen's Reaction Series, decreasing temperature promotes the successive formation of olivine, pyroxene, amphibole, and biotite. What are the general changes occur in the structural types of silicates represented by these minerals? (5pts)
4. Ca-Na and Mg-Fe are common solid solution pairings; which elements are the high temperature components? (5pts)
5. Compare between the following: isomorphism and polymorphism (with mineral examples)-exsolution and solid solution –composition of orthopyroxene and clinopyroxene (5pts)
6. In tectosilicate structure, explain how can get framework silicates with formulas different from SiO_2? (5pts)

Best wishes
Mohamed Abdel Moneim

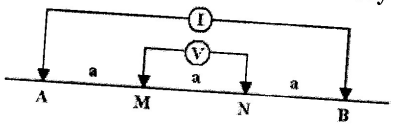
ASSIUT UNIVERSITY
FACULTY OF SCIENCE
GEOLOGY DEPARTMENT

Final Examination
Principals of Geophysics (G250)

Time: 2 hours	Total marks: 50	Two pages	Jan., 2026

A) Answer the following questions: (*Five marks each*)

1. **Explain with drawing the Sato and Mooney model for Mineralization Potential in SP method.**
2. **Calculate the geometric factor (K) of the electrode array sketched below**



3. **Discuss with drawing two problems associated with the interpretation of seismic refraction data.**

B) Define <u>only five</u> of the following (don't answer more than five): (*one mark each*)

1. Apparent resistivity
2. Bulk modulus
3. The geoid
4. Bouguer anomaly
5. Isostasy
6. Declination
7. Shear modulus
8. Magnetic susceptibility

C) Mark <u>only fifteen</u> of the following statements with True or false (don't answer more than fifteen): (*one mark each*)

1. Sediments and sedimentary rocks are less resistive than unweathered igneous and metamorphic rocks
2. The sign of the self-potential is an important diagnostic factor in the interpretation of SP anomalies
3. The higher the value of the modulus, the stronger the material, and the smaller the strain produced by a given stress
4. Sedimentary rocks are higher in gravity acceleration "g" than igneous rocks
5. Sedimentary rocks have in general higher magnetic susceptibilities than basic igneous rocks
6. Resistivity increases with increasing metallic minerals content

See next page

7. Electrokinetic potentials result from the flowing of fluid through a capillary or porous medium
8. Primary seismic waves are slower than secondary seismic waves
9. In gravity and magnetic land survey the station interval should be smaller than the size of the anomalous feature
10. Magnetic survey should be canceled when there is a magnetic storm
11. Self-Potential is classified as an active electrical method whereas the resistivity method is passive
12. The self-potentials are almost invariably negative over the top of the sulfide deposit and are quite stable in time
13. Secondary seismic waves can travel through liquids
14. In gravity survey the typical station spacing for near surface applications (e.g., archaeology) is few kilometers
15. Diurnal correction is applied to magnetic data due to the effect of solar wind on the ionosphere
16. By increasing the electrode spacing, more of the injected current will flow to shallower depths
17. The interpretation of SP is mostly quantitative
18. Electrical profiling is best suited to map lateral electrical resistivity contrasts, such as lithologic contacts
19. For seismic refraction surveying the typical natural frequency of the geophones is 14 Hz
20. The gravity acceleration varies from the equator to the pole by almost 0.5%

D) Provide short answers for <u>only Five</u> of the followings (don't answer more than five): (*three marks each*)

1. Common modes/techniques of electrical resistivity field survey
2. The formula of Archie's law and define all of its components
3. Three different ways of electrical current conduction
4. The source mechanisms of self-potentials
5. The different component of non-polarizable electrode
6. Different types of seismic waves
7. Applications of seismic refraction method
8. List the different corrections applied to gravity data
9. The three sources of earth's magnetic field
10. Applications of magnetic method

Good Luck... *Prof. Dr. Gamal Zidan AbdelAal*

	Assiut University – Faculty of Science First Semester – Final Exam 2025-2026 Geology Department		Program: Geology, Geophysics, Geology-Chemistry Date: 22/1/2026 Time: 2 h
Course Title: Stratigraphy			Code: 210 G
Instructors: Prof. Dr. Magdy S. Mahmoud & Prof. Dr. Amr S. Deaf			
Important:	No. of pages: 1	No. of questions: 6	Total Mark: 50 degree

Answer the following questions:

Q1: Choose if the following statements are true (√) or false (X) (10 degrees; one degree each)

1- In the subsurface, dips of inclined beds can be measured from borehole.
2- Laws of "cross-cutting relationships" and "inclusions" can be seen in intrusive bodies.
3- Magnetostratigraphic resolution is mainly based on grade of metamorphism.
4- The "Group" is the basic lithostratigraphic unit.
5- Correlation of rock units across different geologic areas is a major concern in stratigraphy.
6- In biostratigraphy, we correlate rock successions according to their physical characters.
7- Radioactive dating methods determine absolute ages of rocks.
8- Fossils are the most reliable and precise tools in chronostratigraphy.
9- The vertical variation in rock colors supports superposition.
10- In a worldwide scale, index fossils are normally the majority and the most abundant.

Q2: Chose the correct answer; A, B, C or D (5 degrees; one degree each)

1- Original horizontality means that .....
A- rock layers were deposited initially horizontally
B- all rocks on earth are layered horizontally
C- igneous rocks form horizontal layers
D- rock layers were deposited initially inclined

2- Cyclostratigraphy is the study of rhythmic sedimentary layering that reflects periodic variations in.....
A- marine life B- sedimentation rates C- orbital cycles D- sedimentary environments

3- An alternative selection of a stratotype that is being destructed and damaged is termed .....
A- holostratotype B- lectostratotype C- neostratotype D- parastratorype

4- The process of radioactive carbon dating methods in stratigraphy is called .....
A- chronostratigraphy (absolute dating) B- lithostratigraphy (relative dating)
C- chronostratigraphy (relative dating) D- biostratigraphy (relative dating)

5- The global boundary Stratotype Section and Point (GSSP) of the Maastrichtian Stage/Age defines the .....
A- lower boundary of the Maastrichtian B- upper boundary of the Maastrichtian
C- boundary between Campanian and Maastrichtian D- A and C

Q3: Write in detail on "unconformities" in the rock record. **(15 degrees)**

Answer TWO ONLY of the following questions:

Q4: Write shortly on: **(10 degrees; 2.5 degrees each)**
A- Dipmeter logs B- Law of inclusions
C- Gamma Ray logs D- Contacts between different kinds of rocks

Q5: Write on: **(10 degrees; 2 degrees for A & 8 degrees for B)**
A- Allostratigraphic units B- The concept and basics of cyclostratigraphy

Q6: Write an essay on: **(10 degrees; 2 degrees for A & 8 degrees for B)**
- Write an essay on: A- Importance of measuring the log of the borehole diameter.
B- Global Boundary Stratotype Section and Point (GSSP).

إنتهت الأسئلة مع أطيب الأمنيات بالتوفيق

Assiut University Faculty of Science Geology Department		جامعة أسيوط كلية العلوم قسم الجيولوجيا

First Semester Exam
Geology Students
(Invertebrate Paleontology)

January 2026	G215	50 Marks	Time: 2 hours

ملحوظة: الامتحان يتكون من ورقة واحدة على الوجهين

Answer the following questions

First question (15-degrees, 5 degrees each)

1. Discuss the different types of fossil assemblages according to their live community.

2. What are the different steps of the code of nomenclature for Species.

3. Discuss briefly the geologic history of Sponge.

Second question (5-degree, 1 degree each)
Write the scientific term in front of the following definitions.

1. Marine invertebrate animals, mostly benthonic, and have a pentameral symmetry in its adult form.

2. The science of classification of life forms into meaningful categories or groups.

3. Marine invertebrate that resembles a bivalve mollusk but has two or more arms of ciliated tentacles that are extended for filter feeding

4. Stage between death and burial of organism in which the body get disarticulated, weathered, and transport.

5. The depth in the ocean is usually around 3-4 km, below which the rate of dissolution of calcite increases dramatically.

Third question (10-degrees)
A. Put true or false in front of the following sentences (5 degrees, 1 each).

1. Fossils are usually defined as remains that are older than 10000 years.

2. The Bivalvia shell is bilaterally symmetrical with a plane of symmetry passing perpendicular to the hinge line.

3. When the atmospheric concentration of carbon dioxide increases, the CCD can be expected to decrease in depth and then the ocean's acidity rises.

4. Members of Ectoocochlia Cephalopods hold significant geological importance due to their ability to form exoskeletons.

5. Echinodermata shows a bilateral symmetry symmetry in the earlier stage of growth.

B. Choose the correct answer (5 degrees, 1 each)

1. Which of the following can be mistaken for fossils and is known as a pseudo-fossil?

A. Shells	B. Petrified wood	C. Dendrite crystals	D. Coprolites

2. Permineralization occurs when.....

A. Organic remains freeze	B. Pores are filled with minerals	C. Original parts dissolve completely	D. Organisms dry under sun

3. Members of Heteractinellida sponge completely disappeared in ..... Period

A. Carboniferous	B. Triassic	C. Jurassic	D. Cretaceous

4. ..... considers one of the most primitive of multi-cellular animals.

A. Brachiopoda	B. Foraminifera	C. Porifera	D. Colentrata

5. Planktonic foraminifera reachs their maximum abundance during..... Stage

A. Maastrichtian	B. Eocene	C. Paleocene	D. Neogene

Fourth question (10 degrees, 5 degrees each)
Compare between the following

1. Articulata and inarticulate Brachiopoda

2. Regular and irregular Echinoids

Fifth question (10 degrees, 5 degrees each)
Write on the following

1. What are the factors that influenced death assemblages of foraminifera.

2. Dental plate and types of dentations in Bivalvia shell.

انتهت الأسئلة.....بالتوفيق والنجاح

Geology Department
Faculty of Science
Assiut University

Time: 2 H
Ju. 2026

Optical Mineralogy (235 G)

I-Indicate by the sign (✓) or (×) (15 marks):

1-If we rotate the biaxial mineral around the minor axis we get a shape that is flattened along the rotation axis and is said to be optically negative ( )
2-If we rotate the biaxial mineral around the major axis the ellipsoid is elongated along the rotation axis and is said to be optically positive ( )
3-Biaxial materials have one principal symmetry axis and are tetragonal, hexagonal, or trigonal ( )
4-Birefringence and thickness both decrease uniformly with increasing angle from the optic axis of uniaxial mineral ( )
5-There are one optic axis of biaxial minerals ( )
6-Biaxial minerals are cubic, monoclinic or triclinic (orthorhombic) ( )
7-Isotropic mineral do give interference figures (not give) ( )
8-When 2V is acute about Z: (+) ( )
9-When 2V is acute about X: (-) ( )
10-When 2V = 0°, mineral is uniaxial ( )
11-Orthoclase is with simple twin ( )
12-Biotite has one cleavage ( )
13-Pyroxene has two cleavages ( )
14-Amphiboles have two cleavages ( )
15-Olivine has a parting ( )

2-Choose the correct answer of the following (15 marks):

16-Refractive index of Canada Balsam is
a-1.54 b-1.65 c-1.44
17-Refractive index of garnet mineral is
a-1.77 b-1.66 c-1.88
18-Refractive index of halite mineral
a-1.54 b-1.66 c-1.88
19-Refractive index of fluorite mineral is
a-1.43 b-1.66 c-1.88
35-Mineral show two set of cleavage is
a-muscovite b-pyroxene c-olivine
20-Mineral show rhombohedral cleavage is
a-calcite b-gypsum c-halite
21-The most characteristic mineral twins are
a-feldspar b-bioteite c- hornblende
22-Cross-hatching occur in
a-hornblende b-plagioclase c-orthoclase

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